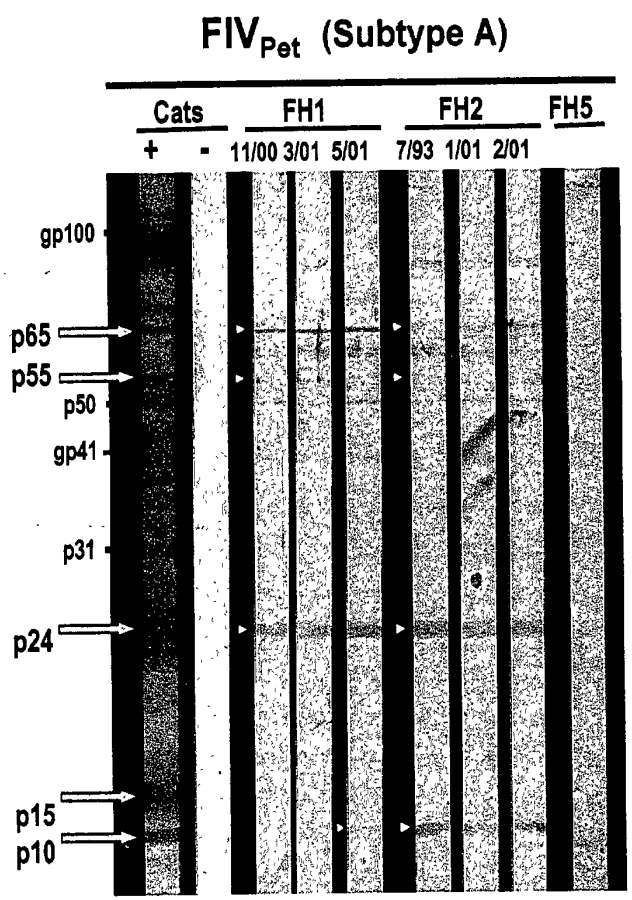

FIV$_{Pet}$ (Subtype A)
Cats
FH1
FH2
FH5
+
-
11/00
3/01
5/01
7/93
1/01
2/01
gp100
p65
p55
p50
gp41
p31
p24
p15
p10

FIG. 1A

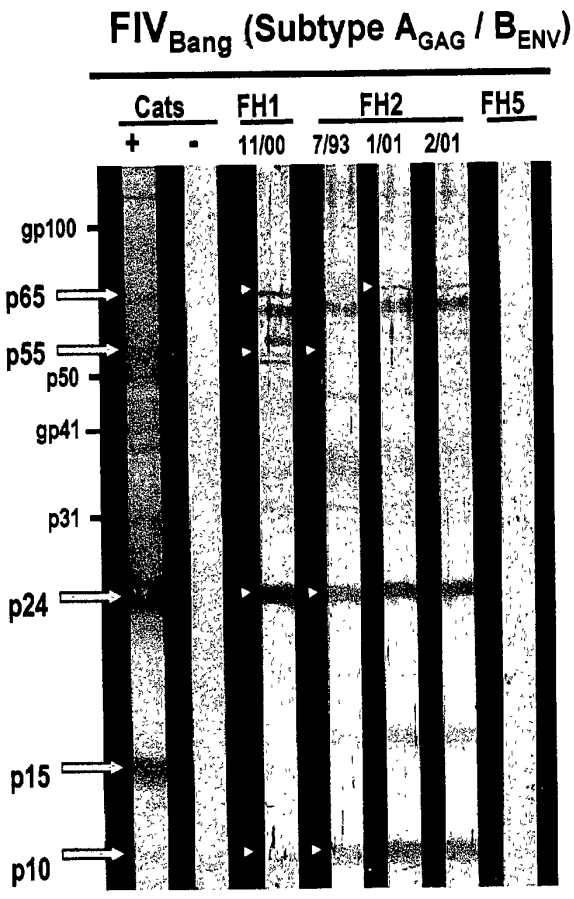

FIV$_{Bang}$ (Subtype A$_{GAG}$ / B$_{ENV}$)
Cats
FH1
FH2
FH5
+
-
11/00
7/93
1/01
2/01
gp100
p65
p55
p50
gp41
p31
p24
p15
p10

FIG. 1B

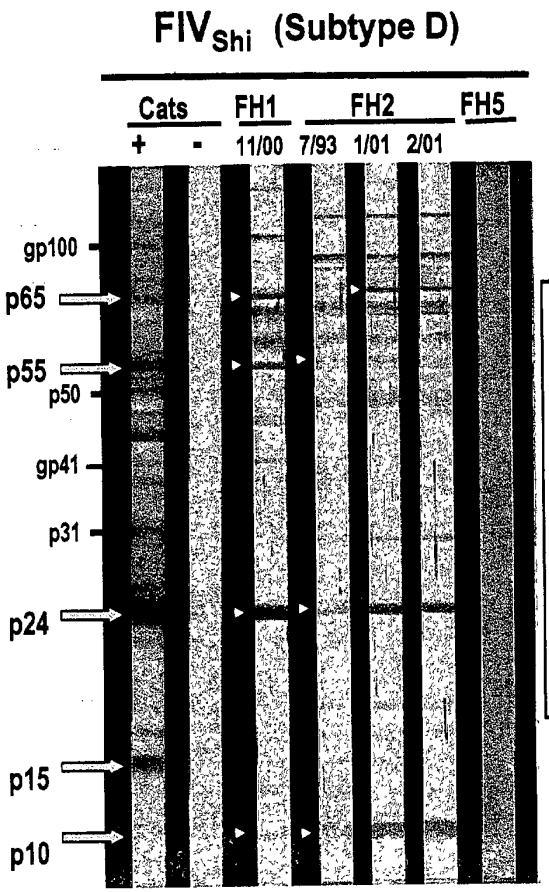


FIG. 1C

VN ANTIBODY	FH1			FH2		FH3		Pooled	C9V	
ANALYSES	11/00	3/01	5/01	7/93	2/01	3/01	6/01	HIV+	Pre	36 wk
Anti-FIV / FC1:	<5	5	<5	5	<5	<5	<5	<5	<5	5
Anti-FIV / Pet:	<5	<5	<5	<5	<5	<5	<5	<5	<5	500
Anti-FIV / UK8:	10	<5	<5	25	<5	<5	<5	<5	<5	5
Anti-HIV-1 / UCD1:	<5	<5	<5	<5	<5	<5	<5	500	<5	<5
Anti-HIV-1 / LAV:	<5	<5	<5	<5	<5	<5	<5	500	<5	<5

FIG. 1D

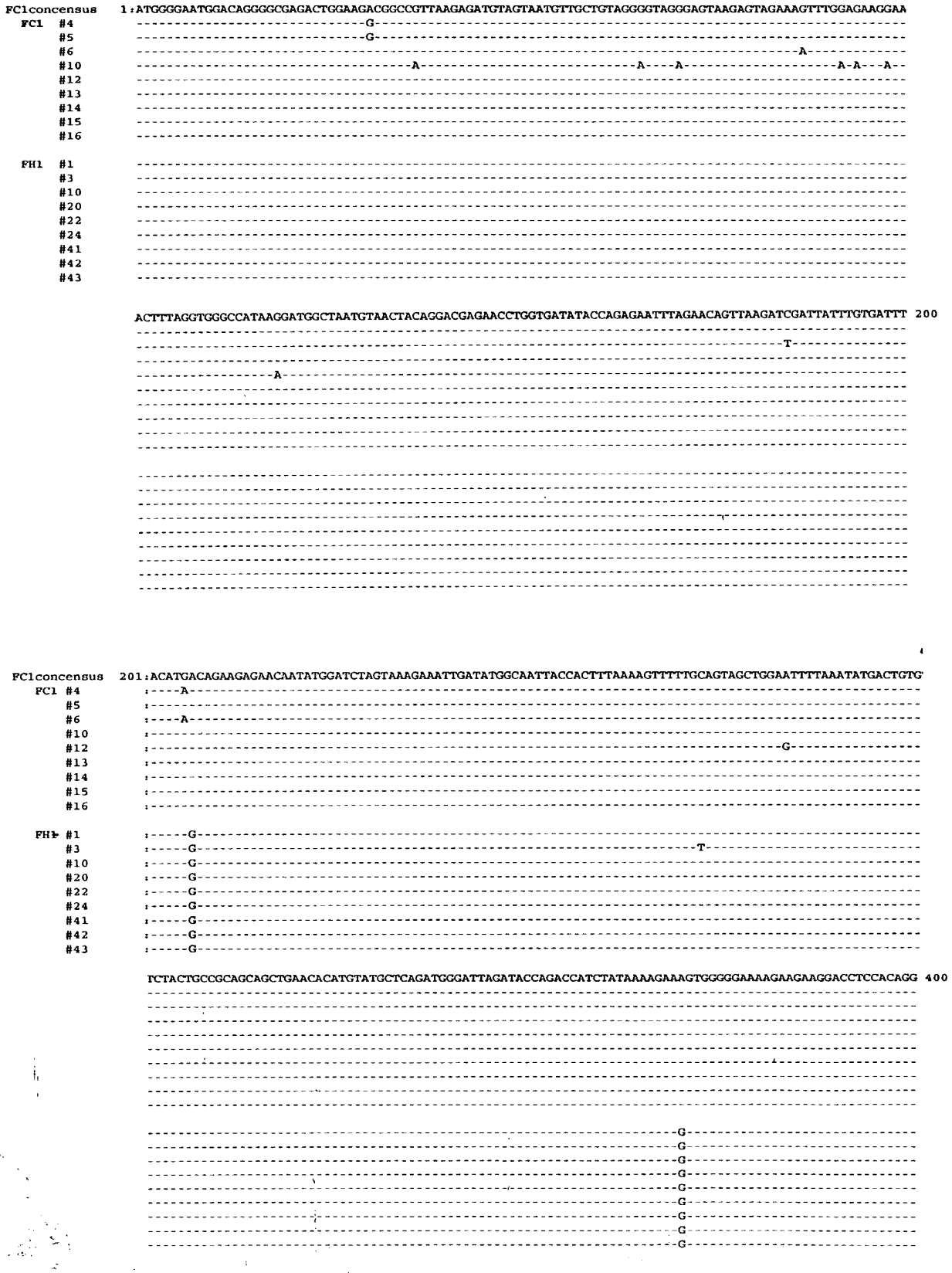

FC1concensus 1:ATGGGGAATGGACAGGGGCGAGACTGGAAGACGGCCGTTAAGAGATGTAGTAATGTTGCTGTAGGGGTAGGGAGTAAGAGTAGAAAGTTTGGAGAAGGAA
FC1 #4
#5
#6
#10
#12
#13
#14
#15
#16
FH1 #1
#3
#10
#20
#22
#24
#41
#42
#43
ACTTTAGGTGGGCCATAAGGATGGCTAATGTAACTACAGGACGAGAACCTGGTGATATACCAGAGAATTTAGAACAGTTAAGATCGATTATTTGTGATTT 200
FC1concensus 201:ACATGACAGAAGAGAACAATATGGATCTAGTAAAGAAATTGATATGGCAATTACCACTTTAAAAGTTTTTGCAGTAGCTGGAATTTTAAATATGACTGTG
FC1 #4
#5
#6
#10
#12
#13
#14
#15
#16
FH1 #1
#3
#10
#20
#22
#24
#41
#42
#43
TCTACTGCCGCAGCAGCTGAACACATGTATGCTCAGATGGGATTAGATACCAGACCATCTATAAAAGAAAGTGGGGGAAAAGAAGAAGGACCTCCACAGG 400

FIG. 2A

```
FC1concensus  401:CTTATCCTATTCAAACAGTAAATGGAGCACCACAGTATGTAGCCCTTGACCCAAAAATGGTGTCCATTTTTATGGAAAAAGCAAGAGAGGGGCTAGGAGG
FC1 #4           :----------------------------------------------------------------------------------------------------
    #5           :----------------------------------------------------------------------------------------------------
    #6           :----------------------------------------------------------------------------------------------------
    #10          :----------------------------------------------------------------------------------------------------
    #12          :----------------------------------------------------------------------------------------------------
    #13          :----------------------------------------------------------------------------------------------------
    #14          :----------------------------------------------------------------------------------------------------
    #15          :----------------------------------------------------------------------------------------------------
    #16          :----------------------------------------------------------------------------------------------------

FH1 #1           :-------------------------------------------------------------------C--------------------------------
    #3           :-------------------------------------------------------------------C--------------------------------
    #10          :-------------------------------------------------------------------C--------------------------------
    #20          :-------------------------------------------------------------------C--------------------------------
    #22          :-------------------------------------------------------------------C--------------------------------
    #24          :-------------------------------------------------------------------C--------------------------------
    #41          :-------------------------------------------------------------------C--------------------------------
    #42          :-------------------------------------------------------------------C--------------------------------
    #43          :-------------------------------------------------------------------C--------------------------------

                  TGAGGAGGTCCAACTGTGGTTCACAGCCTTTTCTGCTAATTTAACTTCAACTGATATGGCTACATTAATTATGTCTGCGCCTGGCTGTGCAGCAGATAAA 600
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ---------------------------------------------------C------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------A-----------------------------------------------------------------
                  ---------------------------------------------C------------------------------------------------------

                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ---------------------------------------------------------------------C------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------

FC1concensus  601:GAGATCTTAGATGAAACACTGAAACAGATGACAGCTGAGTATGATCGTACTCATCCTCCTGATGGGCCTAGACCGCTGCCCTATTTCACCGCTGCGGAGA
FC1 #4           :-----------------------------A--------T--------------------------------------A----------------------
    #5           :-----------------------------A--------T-------------------------------------------------------------
    #6           :-----------------------------A--------T-------------------------------------------------------------
    #10          :----------------------------------------------------------------------------------------------------
    #12          :----------------------------------------------------------------------------------------------------
    #13          :----------------------------------------------------------------------------------------------------
    #14          :------------------------------------A---------------------------------------------------------------
    #15          :----------------------------------------------------------------------------------------------------
    #16          :----------------------------------------------------------------------------------------------------

FH1 #1           :-----------------------------------------------------------------------G-----A----------------------
    #3           :----------------------------------------------------------------------------------------------------
    #10          :----------------------------------------------------------------------------------------------------
    #20          :----------------------------------------------------------------------------------------------------
    #22          :----------------------------------------------------------------------------------------------------
    #24          :----------------------------------------------------------------------------------------------------
    #41          :----------------------------------------------------------------------------------------------------
    #42          :----------------------------------------------------------------------------------------------------
    #43          :----------------------------------------------------------------------------------------------------

                  TTATGGGAATAGGATTAACTCAAGAACAACAAGCGGAGCCCAGATTTGCACCAGCTAGAATGCAGTGTAGAGCATGGTATCTTGAAGCACTAGGAAAGTT 800
                  ------------------------------------------------------------------------------------------------G---
                  ------------------------------------------------------------------------------------------------G---
                  ------------------------------------------------------------------------------------------------G---
                  -------------------------------G--------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------

                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ---------------------------------------------------------------G------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
```

FIG. 2B

```
FC1concensus  801:GGCAGCCATAAAAGCTAAATCTCCCCGAGCAGTGCAATTGAAGCAAGGAGCTAAAGAGGATTATTCCTCATTTATAGATAGATTATTTGCTCAAATAGAT
   FC1 #4         :-------------------C--------------------------------------------------------------------------------
       #5         :----------------------------------------------------------------------------------------------------
       #6         :-------------------------T--------------------------------------------------------------------------
       #10        :---------------------------------------A------------------------------------------------------------
       #12        :----------------------------------------------------------------------------------------------------
       #13        :----------------------------------------------------------A-----------------------------------------
       #14        :----------------------------------------------------------------------------------------------------
       #15        :----------------------------------------------------------------------------------------------------
       #16        :----------------------------------------------------------------------------------------------------

   FH1 #1         :----------------------------------------------------------------------------------------------------
       #3         :----------------------------------------------------------------------------------------------------
       #10        :----------------------------------------------------------------------------------------------------
       #20        :----------------------------------------------------------------------------------------------------
       #22        :----------------------------------------------------------------------------------------------------
       #24        :----------------------------------------------------------------------------------------------------
       #41        :----------------------------------------------------------------------------------------------------
       #42        :----------------------------------------------------------------------------------------------------
       #43        :--------------------------------------------------------------------------C-------------------------

                   CAAGAGCAGAACACAGCTGAAGTAAAGCTGTATTTAAAACAATCTTTGAGCATAGCCAATGCTAACCCAGATTGTAAAAGGGCAATGAGTCATCTTAAAC 1000
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------

                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------

FC1concensus 1001:CAGAGAGTACTTTAGAGGAAAAACTGAGAGCCTGTCAAGAGGTAGGATCACCAGGATATAAAATGCAGTTGTTAGCAGAAGCTCTTACAAGGGTTCAGAC
   FC1 #4         :----------------------------------------------------------------------------------------------------
       #5         :----------------------------------------------------------------------------------------------------
       #6         :----------------------------------------------------------------------------------------------------
       #10        :----------------------------------------------------------------------------------------------------
       #12        :----------------------------------------------------------------------------------------------------
       #13        :----------------------------------------------------------------------------------------------------
       #14        :----------------------------------------------------------------------------------------------------
       #15        :----------------------------------------------------------------------------------------------------
       #16        :----------------------------------------------------------------------------------------------------

   FH1 #1         :----------------------------------------------------------------------------------------------------
       #3         :----------------------------------------------------------------------------------------------------
       #10        :----------------------------------------------------------------------------------------------------
       #20        :----------------------------------------------------------------------------------------------------
       #22        :----------------------------------------------------------------------------------------------------
       #24        :----------------------------------------------------------------------------------------------------
       #41        :----------------------------------------------------------------------------------------------------
       #42        :----------------------------------------------------------------------------------------------------
       #43        :----------------------------------------------------------------------------------------------------

                   AGTTCAAACAAGAGGATCTAGACCAACGTGTTTCAATTGTAAAAAACCAGGCCACCTGGCCAAACAATGTAGAGAAGCAAAGAGATGTAACAACTGTGGA 1200
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ---------------------------------T------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------T-----------------------------------------------------------------------------
                   --------------------------T-------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------

                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   ----------------------------------------------------------------------------------------------------
                   -------------------------------------------------------T--------------------------------------------
```

FIG. 2C

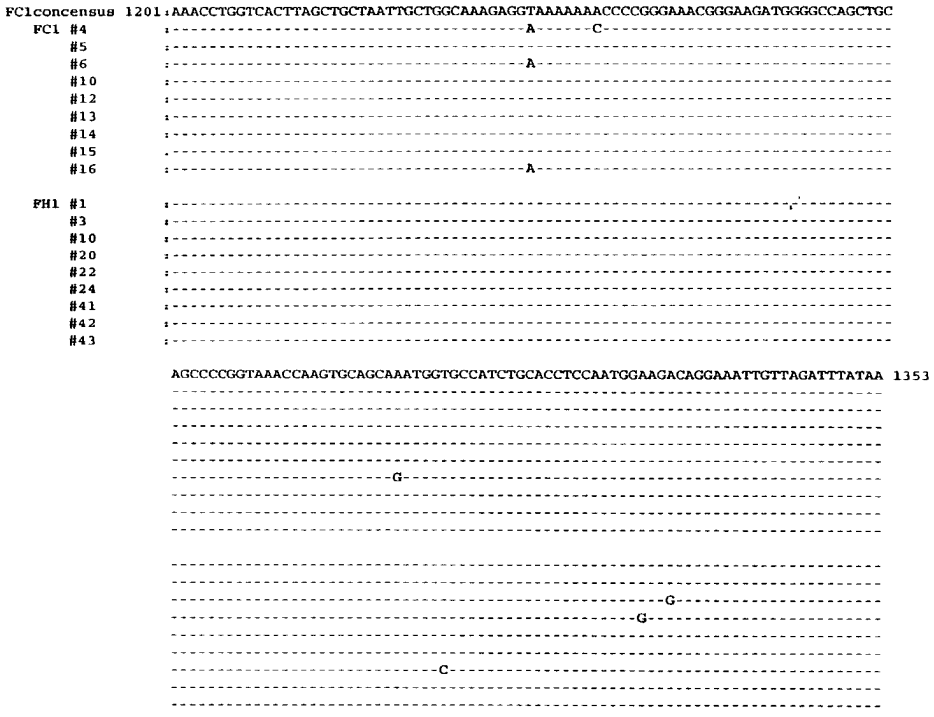

FC1concensus 1201 :AAACCTGGTCACTTAGCTGCTAATTGCTGGCAAAGAGGTAAAAAAACCCCGGGAAACGGGAAGATGGGGCCAGCTGC
FC1 #4
#5
#6
#10
#12
#13
#14
#15
#16
FH1 #1
#3
#10
#20
#22
#24
#41
#42
#43
AGCCCCGGTAAACCAAGTGCAGCAAATGGTGCCATCTGCACCTCCAATGGAAGACAGGAAATTGTTAGATTTATAA 1353

FIG. 2D

```
FC1concensus    1:MGNGQGRDWKTAVKRCSNVAVGVGSKSRKFGEGNFRWAIRMANVTTGREPGDIPENLEQLRSIICDLHDRREQYGSSKEIDMAITTLKVFAVAGILNMTV
FC1 #4            ----------A--------------------------------------------------------N-------------------------------
    #5            ----------A--------------------------------------------------L--------------------------------------
    #6            --------------------------------------------------------------------N-------------------------------
    #10           ------------I----------E-----EKE-------K------------------------------------------------------------
    #12           ----------------------------------------------------------------------------------------------V-----
    #13           ----------------------------------------------------------------------------------------------------
    #14           ----------------------------------------------------------------------------------------------------
    #15           ----------------------------------------------------------------------------------------------------
    #16           ----------------------------------------------------------------------------------------------------

FH1 #1            --------------------------------------------------------------------G-------------------------------
    #3            --------------------------------------------------------------------G---------------------V---------
    #10           --------------------------------------------------------------------G-------------------------------
    #20           --------------------------------------------------------------------G-------------------------------
    #22           --------------------------------------------------------------------G-------------------------------
    #24           --------------------------------------------------------------------G-------------------------------
    #41           ---------------------------------D----------------------------------G-------------------------------
    #42           ---------------------------------D----------------------------------G-------------------------------
    #43           --------------------------------------------------------------------G-------------------------------

                  STAAAAEHMYAQMGLDTRPSIKESGGKEEGPPQAYPIQTVNGAPQYVALDPKMVSIFMEKAREGLGGEEVQLWFTAFSANLTSTDMATLIMSAPGCAADK 200
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  -----------------------------------------------------------------------------T----------------------
                  ----------------------------------------------------------------------------------------------------

                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------
                  ----------------------G-----------------------------------------------------------------------------

FC1concensus  201:EILDETLKQMTAEYDRTHPPDGPRPLPYFTAAEIMGIGLTQEQQAEPRFAPARMQCRAWYLEALGKLAAIKAKSPRAVQLKQGAKEDYSSFIDRLFAQID
FC1 #4            ---------I--D----------------------------------------------------R-------P--------------------------
    #5            ---------I--D----------------------------------------------------R-------P--------------------------
    #6            ---------I--D----------------------------------------------------R-------P-*------------------------
    #10           ----------------------------------------------------------------------------------------------------
    #12           ----------------------------------------------------------------------------------------------------
    #13           ---------------------------------------------------------------------------------------N------------
    #14           ----------------------------------------------------------------------------------------------------
    #15           ----------------------------------------------------------------------------------------------------
    #16           ----------------------------------------------------------------------------------------------------

FH1 #1            ----------------------------------------------------------------------------------------------------
    #3            ----------------------------------------------------------------------------------------------------
    #10           ----------------------------------------------------------------------------------------------------
    #20           ----------------------------------------------------------------------------------------------------
    #22           -------------------------------------------------------R--------------------------------------------
    #24           ----------------------------------------------------------------------------------------------------
    #41           ----------------------------------------------------------------------------------------------------
    #42           ----------------------------------------------------------------------------------------------------
    #43           -------------------------------------------------------------------------------------------T--------

                  QEQNTAEVKLYLKQSLSIANANPDCKRAMSHLKPESTLEEKLRACQEVGSPGYKMQLLAEALTRVQTVQTRGSRPTCFNCKKPGHLAKQCREAKRCNNCG 400
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  --------------------------------------------------------------------------------------------------- 399
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  --------------------------------------------------------------------------S-------------------------
                  ---------------------------------------------------------------------------M------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------

                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
                  ----------------------------------------------------------------------------------------------------
```

FIG. 2E

```
FC1concensus  401:KPGHLAANCWQRGKKTPGNGKMGPAAAPVNQVQQMVPSAPPMEDRKLLDL 450
   FC1 #4        :---------------P----------------------------------
       #5         --------------------------------------------------
       #6     400:-------------------------------------------------- 449
       #10        --------------------------------------------------
       #12        --------------------------------------------------
       #13        --------------------------------------------------
       #14        --------------------------------------------------
       #15        --------------------------------------------------
       #16        --------------------------------------------------

   FH1 #1         --------------------------------------------------
       #3         --------------------------------------------------
       #10        -------------------------------------------G------
       #20        ------------------------------------------G-------
       #22        --------------------------------------------------
       #24        --------------------------------------------------
       #41        -----------------------------------A--------------
       #42        -----------------------------------A--------------
      #43     ------------------------------------------
```

FIG. 2F

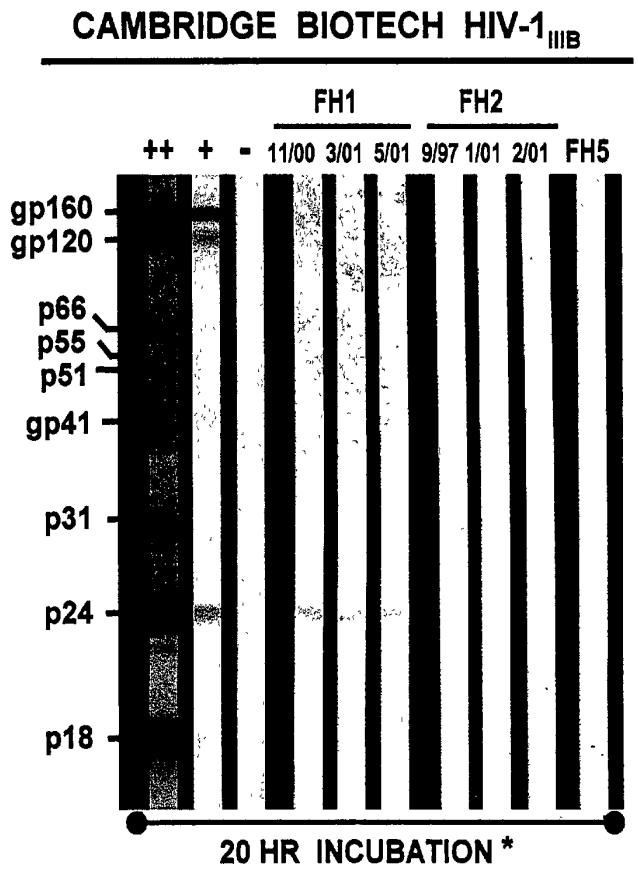

CAMBRIDGE BIOTECH HIV-1IIIB
FH1
FH2
++
+
-
11/00
3/01
5/01
9/97
1/01
2/01
FH5
gp160
gp120
p66
p55
p51
gp41
p31
p24
p18
20 HR INCUBATION *

FIG. 3A

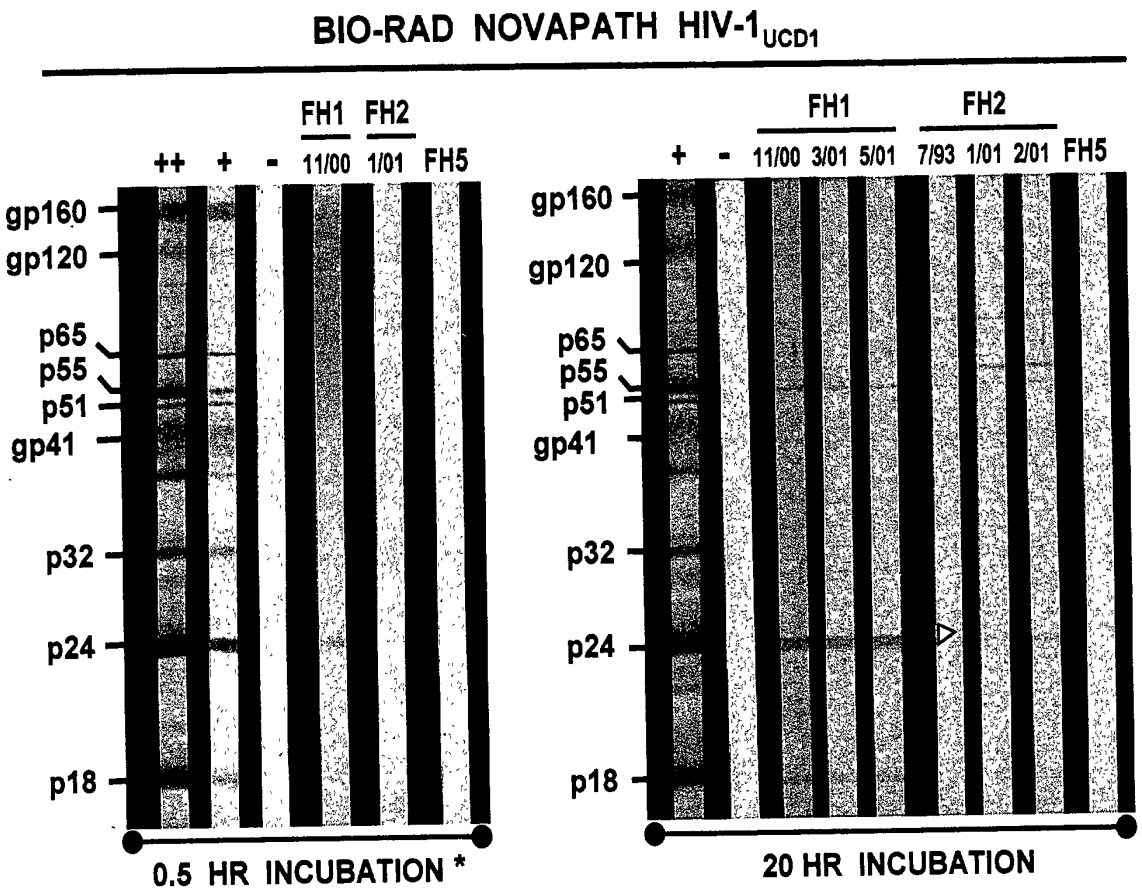
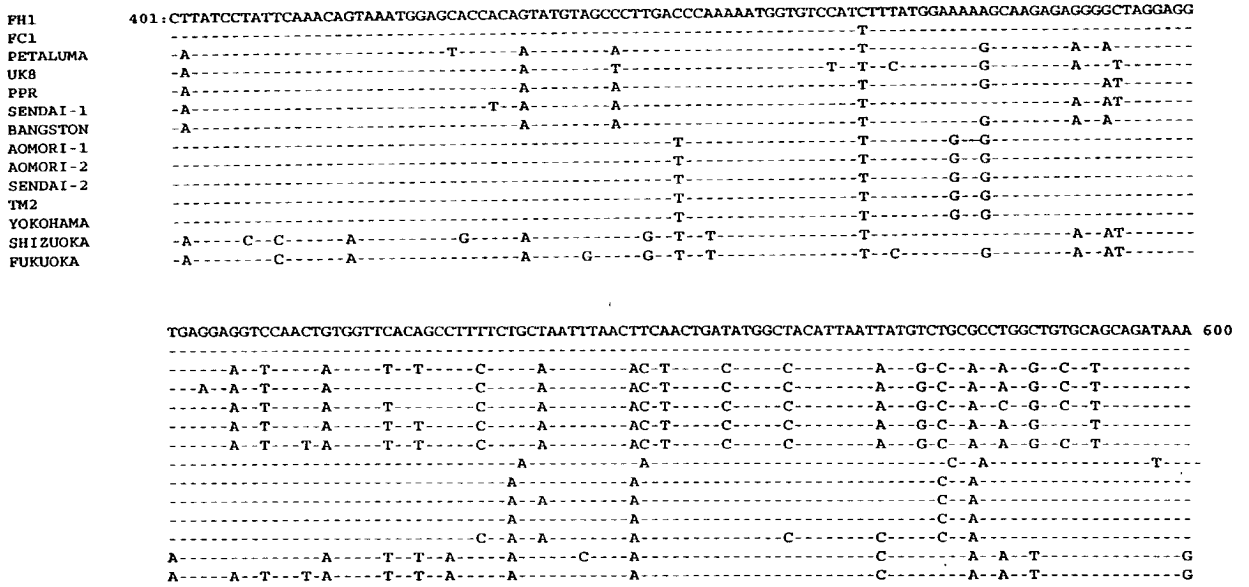

BIO-RAD NOVAPATH HIV-1UCD1
FH1
FH2
++
+
-
11/00
1/01
FH5
gp160
gp120
p65
p55
p51
gp41
p32
p24
p18
0.5 HR INCUBATION *
FH1
FH2
+
-
11/00
3/01
5/01
7/93
1/01
2/01
FH5
gp160
gp120
p65
p55
p51
gp41
p32
p24
p18
20 HR INCUBATION

FIG. 3B

FIG. 3C

```
FH1       1:ATGGGGAATGGACAGGGGCGAGACTGGAAGACGGCCGTTAAGAGATGTAGTAATGTTGCTGTAGGGGTAGGGAGTAAGAGTAGAAAGTTTGGAGAAGGAA
FC1         ----------------------------------------------------------------------------------------------------
PETALUMA    ----------------------T-----A-T----A---------------------------A------G-G-------A---A-----------G-
UK8         ----------------------T-----A-T----A---------C-----------------A------G-G-------A---A-----------G-
PPR         ----------------------T-----A-T----A---------------------------A------G-G-------A---A--------G--G-
SENDAI-1
BANGSTON    -----------T--------T--T-----A-T----A----A---------------------A------G-G-G-----A---A-------------
AOMORI-1
AOMORI-2
SENDAI-2
TM2         ----------------------------A-T----A---------------------------A----------------A--GA--C----------
YOKOHAMA
SHIZUOKA          ----------------T-----A------A-A-----------------------TACG--ACAACGA----AG-----C--G-------
FUKUOKA

            ACTTTAGGTGGGCCATAAGGATGGCTAATGTAACTACAGGACGAGAACCTGGTGATATACCAGAGAATTTAGAACAGTTAAGATCGATTATTTGTGATTT 200
            ----------------------------------------------------------------------------------------------------
            -T--C--A--------T--A-----------T------------------------------C------T--AC----G-T-G-------C-----
            -T--C--A--------C--A-----------T------------------------------C------T--AC-G--G-T-G-------C-----
            -T----------------A-----------T------------------------------C------T--A-----G-T-G-------C-----

            -T--C--A--------T--A--------C---T------------------------------C------T--AC----G-T-G-------C--A--



            --------A---------------------------------------A---------------C------------------A--------------

            -T-----A------T-G--A-----C---G-------------T----------------------CC-----T--AC-G---GTAC----C--------


FH1     201:ACATGGCAGAAGAGAACAATATGGATCTAGTAAAGAAATTGATATGGCAATTACCACTTTAAAAGTTTTTGCAGTAGCTGGAATTTTAAATATGACTGTG
FC1         -----A----------------------------------------------------------------------------------------------
PETALUMA    ---A-AA---------A---T---------C---------------------GTG--A--------C-----G-----A---C-------------G---
UK8         ---A-AA---------A---T---------C-----------------------------C------------------TG---C-------------A---
PPR         ---A-AA---------A---T---------C-----------C-----------A--A--------C----------TG---C-------------A---
SENDAI-1                                                       T-T--A--------C----------A-----------------A---
BANGSTON    ---A-AA---------A---T---------C------T-G--C-----------T--A--------C--C--G----TA---C-------------A---
AOMORI-1                                                       GTT--------------------G--A------C-------------A
AOMORI-2                                                       ----------------------G--A------C-------------A
SENDAI-2                                                       ----------------------G--A------C-------------A
TM2         ---A--------------C--------------G------------------------------------G--A------C-------------A
YOKOHAMA                                                       -----C-----------------G--A------C-------------A
SHIZUOKA    ---G-AA-----G--GA---T---------C------C-------------CCT----C--------------------A---G-C---------T----A
FUKUORA                                         CT----C------------------A-----C--------------A-----C--TA-T--C------A-

            TCTACTGCCGCAGCAGCTGAACACATGTATGCTCAGATGGGATTAGATACCAGACCATCTATAAAAGAAGGTGGGGGAAAAGAAGAAGGACCTCCACAGG 400
            ----------------------A-------------------------------------------A--------------------------------
            --------T--T---------A-T------T----A-----------C--T--G--------G-------CA--T--------G-----C----------
            --------T--T---------A-T------A-----------------C--T-----------C---G----C---A--------G-----C----------
            --------T--T---------A-T------A-----------------C--T-----G----C---------CG--A--------G-----C----------
            --------T--T---------A---------AA---A-----------C--T-----G----C--G-----CA--A--------G-----C----------
            --------T--T---------A---------A----------------C-----G-------C--G-----CA--A--------G---A-C----------
            ---------A-----------A-T------------------------C-----------------------A---------------------------
            ---------A-----------A-T------------------------C-----------------------A---------------------------
            ---------A-----------A-T------------------------C-----------------------A------------G--------------
            ---------A-----------A-T------------------------C-------------G--------A---------------------------
            ---------A-----------A-T------------------------C-----------------------A-------------------A-------
            --------TA-T--C------A-T--------------------------T---------T----G--G-CA--A-----G-T---G-AG----------
            T-----------A--------------T---------T----G--G-CA--A-------T---G-AG-----G----
```

FIG. 4A


FH1
FC1
PETALUMA
UK8
PPR
SENDAI-1
BANGSTON
AOMORI-1
AOMORI-2
SENDAI-2
TM2
YOKOHAMA
SHIZUOKA
FUKUOKA
401:CTTATCCTATTCAAACAGTAAATGGAGCACCACAGTATGTAGCCCTTGACCCAAAAATGGTGTCCATCTTTATGGAAAAAGCAAGAGAGGGGCTAGGAGG
TGAGGAGGTCCAACTGTGGTTCACAGCCTTTTCTGCTAATTTAACTTCAACTGATATGGCTACATTAATTATGTCTGCGCCTGGCTGTGCAGCAGATAAA 600

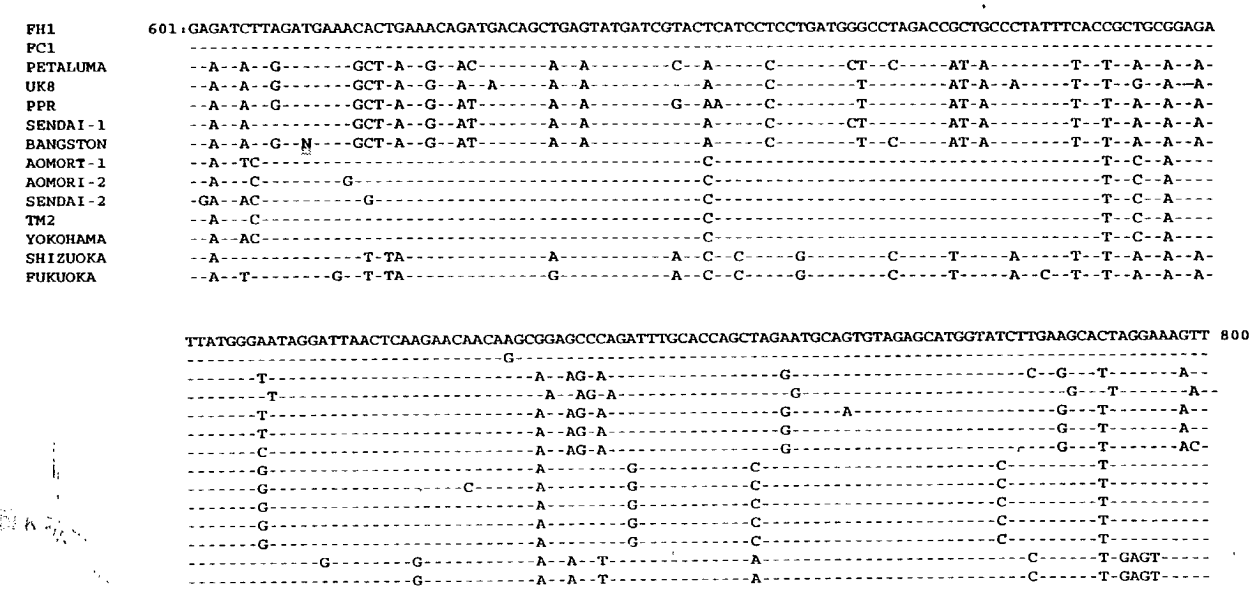

FH1
FC1
PETALUMA
UK8
PPR
SENDAI-1
BANGSTON
AOMORI-1
AOMORI-2
SENDAI-2
TM2
YOKOHAMA
SHIZUOKA
FUKUOKA
601:GAGATCTTAGATGAAACACTGAAACAGATGACAGCTGAGTATGATCGTACTCATCCTCCTGATGGGCCTAGACCGCTGCCCTATTTCACCGCTGCGGAGA
TTATGGGAATAGGATTAACTCAAGAACAACAAGCGGAGCCCAGATTTGCACCAGCTAGAATGCAGTGTAGAGCATGGTATCTTGAAGCACTAGGAAAGTT 800

FIG. 4B

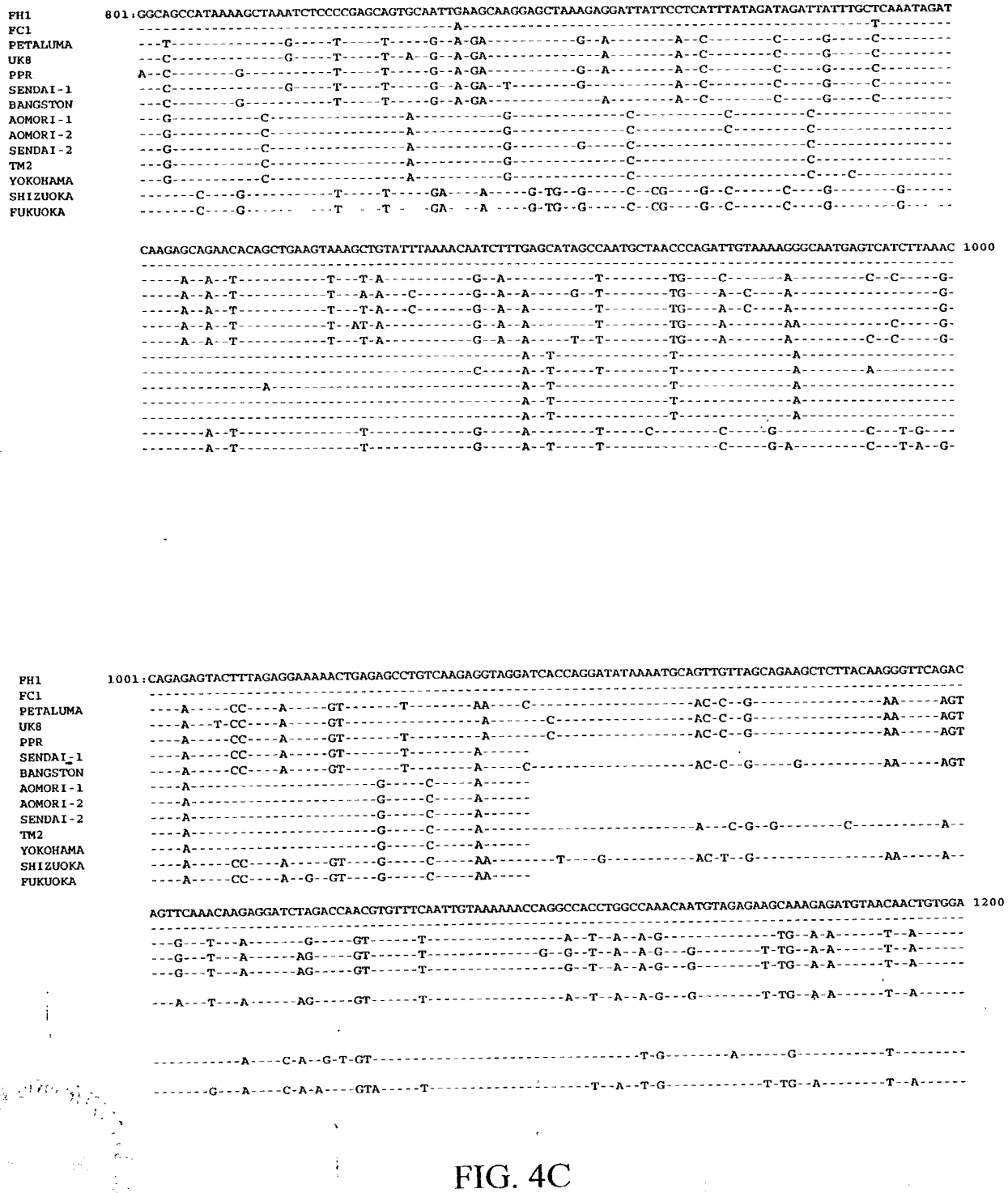

FH1
FC1
PETALUMA
UK8
PPR
SENDAI-1
BANGSTON
AOMORI-1
AOMORI-2
SENDAI-2
TM2
YOKOHAMA
SHIZUOKA
FUKUOKA
801:GGCAGCCATAAAAGCTAAATCTCCCCGAGCAGTGCAATTGAAGCAAGGAGCTAAAGAGGATTATTCCTCATTTATAGATAGATTATTTGCTCAAATAGAT
CAAGAGCAGAACACAGCTGAAGTAAAGCTGTATTTAAAACAATCTTTGAGCATAGCCAATGCTAACCCAGATTGTAAAAGGGCAATGAGTCATCTTAAAC 1000
1001:CAGAGAGTACTTTAGAGGAAAAACTGAGAGCCTGTCAAGAGGTAGGATCACCAGGATATAAAATGCAGTTGTTAGCAGAAGCTCTTACAAGGGTTCAGAC
AGTTCAAACAAGAGGATCTAGACCAACGTGTTTCAATTGTAAAAAACCAGGCCACCTGGCCAAACAATGTAGAGAAGCAAAGAGATGTAACAACTGTGGA 1200

FIG. 4C

```
FH1        1201:AAACCTGGTCACTTAGCTGCTAATTGCTGGCAAAGAGGTAAAAAAACCCCGGGAAACGGGAAGATGGGGCCAGCTGCAGCCCCGGTAAACCAAGTGCAGC
FC1             ----------------------------------------------------------------------------------------------------
PETALUMA        -----------TG-------C-----T------G--AA--G---G-ATT--------T-----GC-----G------------A--G--T---A------
UK8             -G---------T--------C-GA--------GG-T--------G-A-T--------T-----GC-----G------------A---------------
PPR             -----------T--------C--A--T------G-T-------G--ATT--------T-----GC-----G------------A--G--T----------
SENDAI-1
BANGSTON        --G--------T--------C--A--T------G-T--------G-ATT--------------GC-----G------------A--G--T----------
AOMORI-1
AOMORI-2
SENDAI-2
TM2             ------------------------------G------GG------T---------A----G------G------------A---------------
YOKOHAMA
SHIZUOKA        --G------C-T--G-----C--A--T------G--A-C-G---TG-TT--------------------G------------A---------------
FUKUOKA

                AAATGGT***GCCATCTGCACCTCCAATGGAAGACAGGAAATTGTTAGATTTATAA 1353
                -------***----------------------------------------------
                --GCA--AAT---------------------G--G-AACT----GATTTA-A-
                -GGCA--AAT---------------------G--G--ACT----GATTTA-A-
                ---CA--AAT---------------------G--A-AATT----GATTTA-A-A

                --GCA--AATA------------T----A--G--G-AACT----GATTTA-A-



                ----A--***A--------------------G--G-AACT---AGATTTA-A-

                --GCA--***----------T------G-------G-A-TTG--AGATTTA-A-
```

FIG. 4D

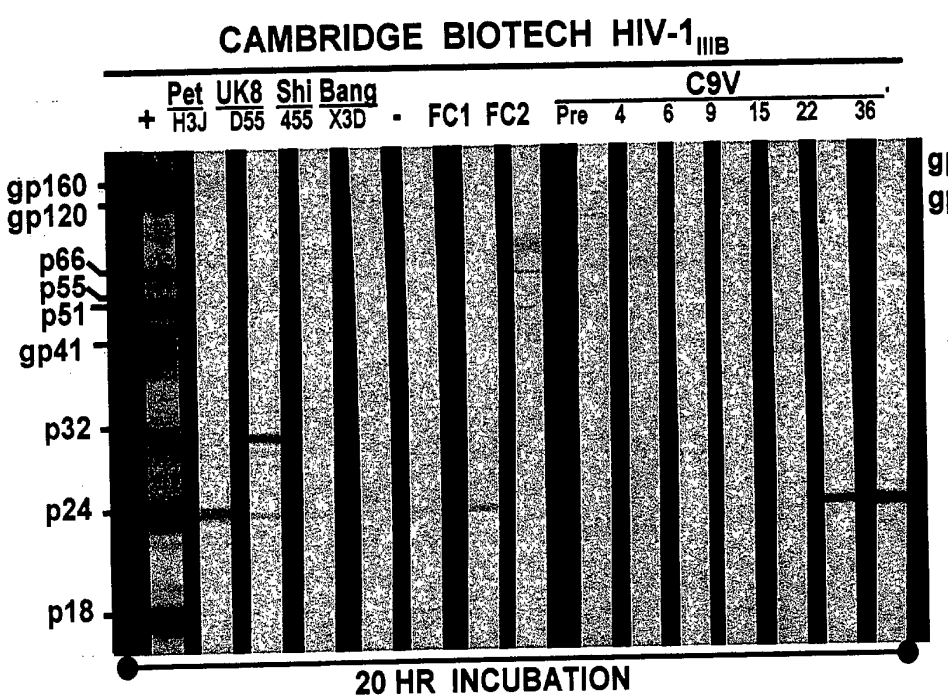

CAMBRIDGE BIOTECH HIV-1IIIB
+
Pet H3J
UK8 D55
Shi 455
Bang X3D
-
FC1
FC2
C9V
Pre
4
6
9
15
22
36
gp160
gp120
p66
p55
p51
gp41
p32
p24
p18
20 HR INCUBATION

FIG. 5A

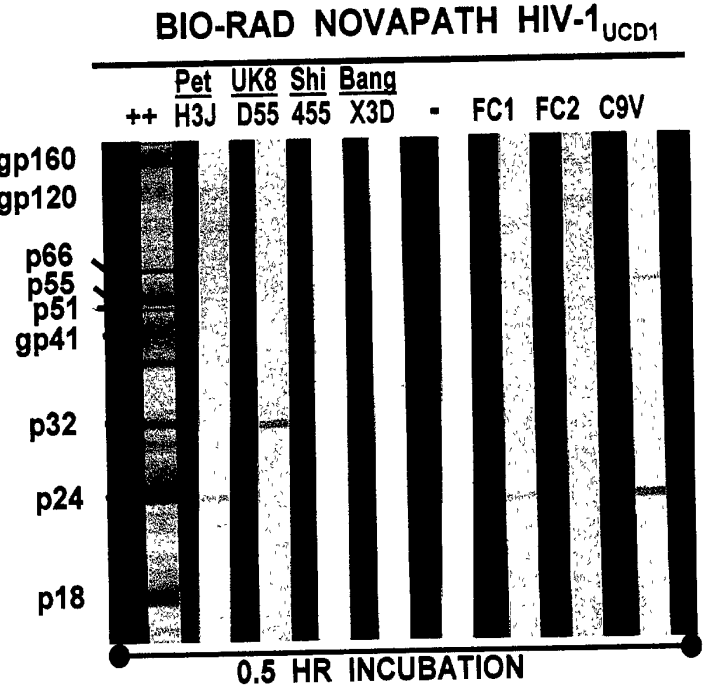

BIO-RAD NOVAPATH HIV-1UCD1
++
Pet H3J
UK8 D55
Shi 455
Bang X3D
-
FC1
FC2
C9V
gp160
gp120
p66
p55
p51
gp41
p32
p24
p18
0.5 HR INCUBATION

FIG. 5B

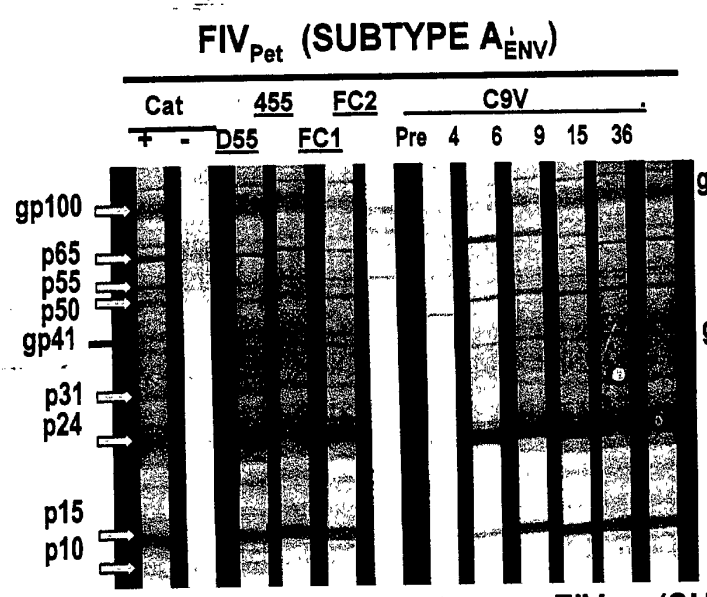


FIG. 5C

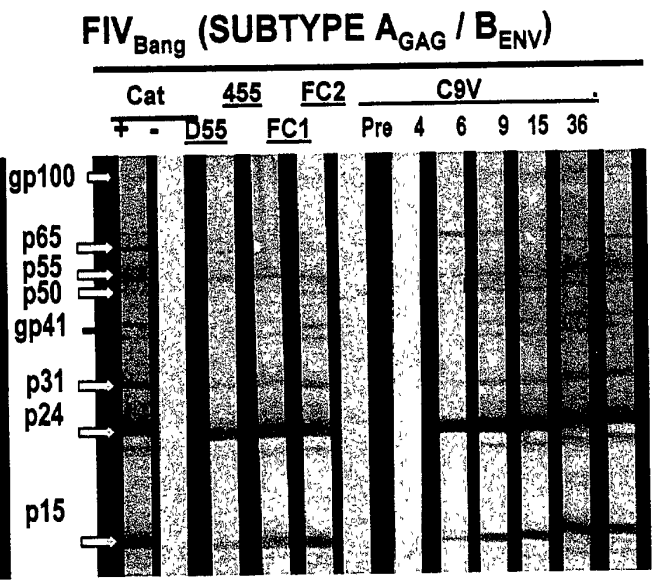


FIG. 5D

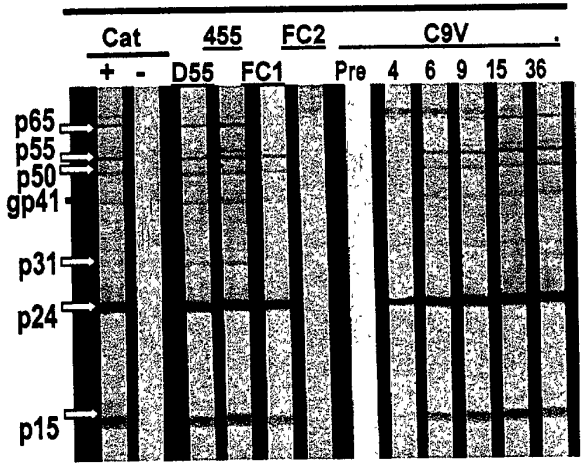


FIG. 5E

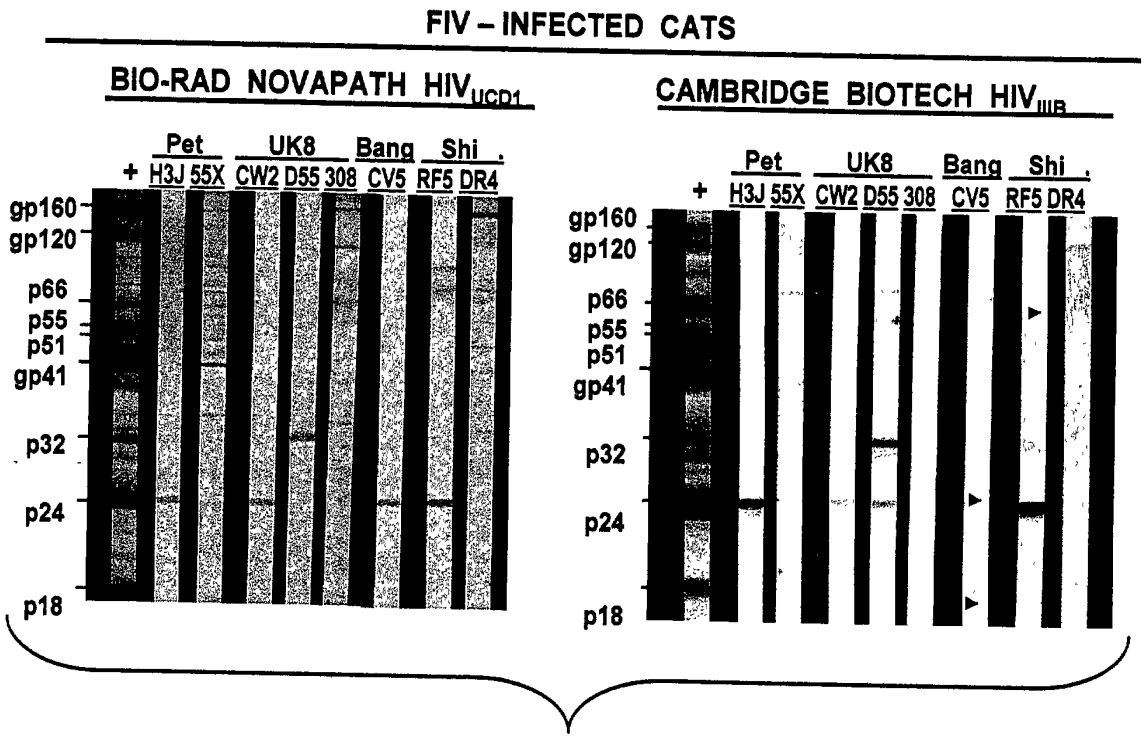

FIV – INFECTED CATS
BIO-RAD NOVAPATH HIV$_{UCD1}$
CAMBRIDGE BIOTECH HIV$_{IIIB}$
Pet
UK8
Bang
Shi
+ H3J 55X CW2 D55 308 CV5 RF5 DR4
gp160
gp120
p66
p55
p51
gp41
p32
p24
p18

FIG. 6A.

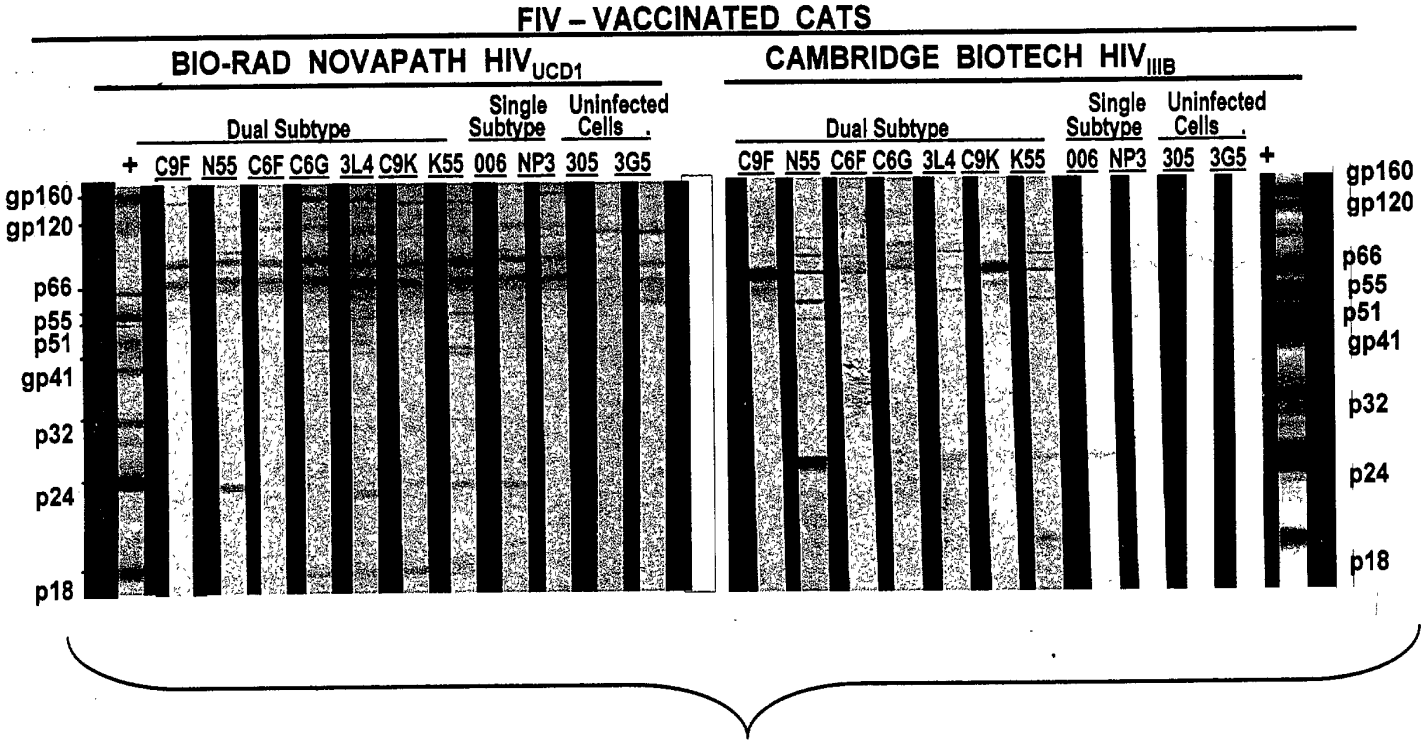

FIV – VACCINATED CATS
BIO-RAD NOVAPATH HIV$_{UCD1}$
CAMBRIDGE BIOTECH HIV$_{IIIB}$
Dual Subtype
Single Subtype
Uninfected Cells
+ C9F N55 C6F C6G 3L4 C9K K55 006 NP3 305 3G5
C9F N55 C6F C6G 3L4 C9K K55 006 NP3 305 3G5 +
gp160
gp120
p66
p55
p51
gp41
p32
p24
p18

FIG. 6B

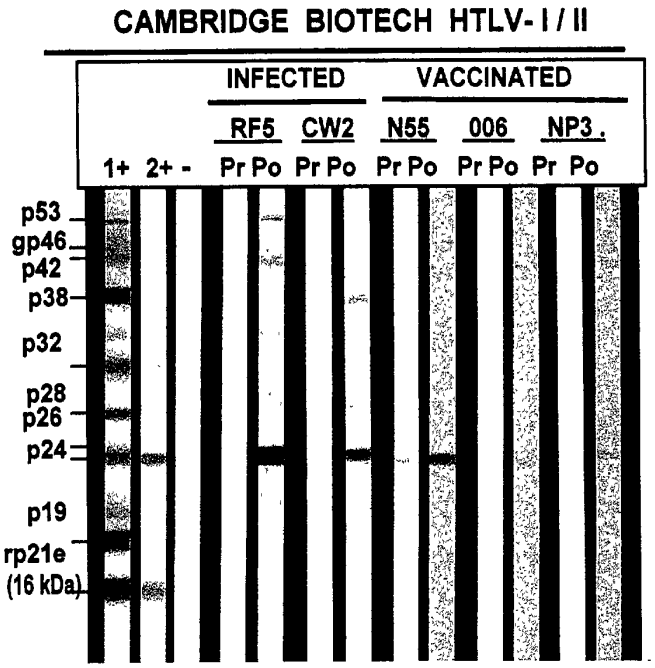

CAMBRIDGE BIOTECH HTLV-I/II
INFECTED
VACCINATED
RF5
CW2
N55
006
NP3.
1+ 2+ - Pr Po Pr Po Pr Po Pr Po Pr Po
p53
gp46
p42
p38
p32
p28
p26
p24
p19
rp21e
(16 kDa)

FIG. 6C

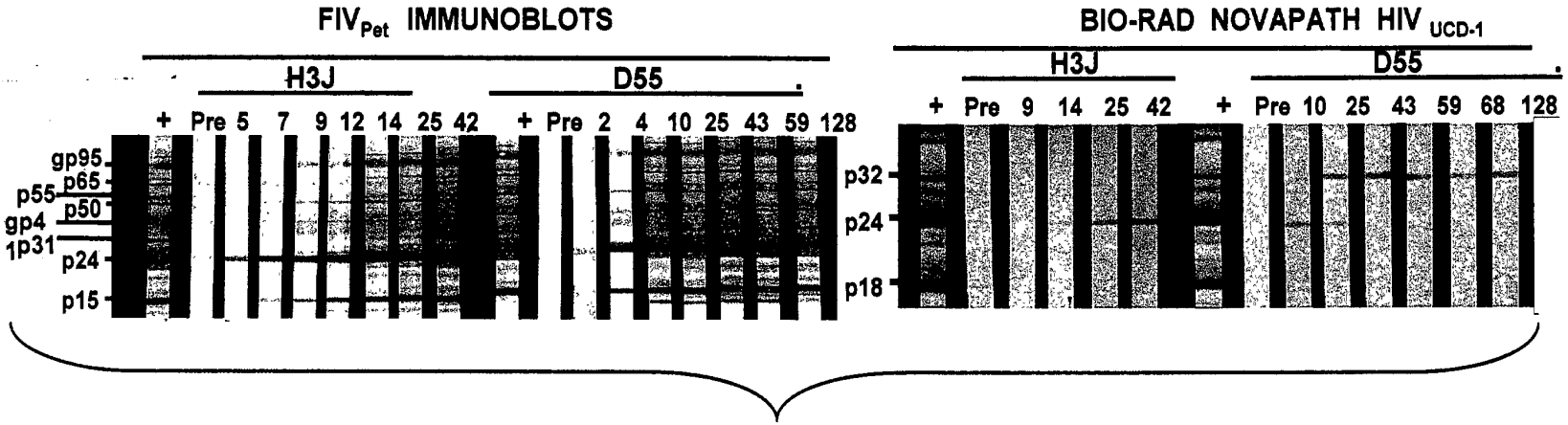

FIV Pet IMMUNOBLOTS
H3J
D55
+ Pre 5 7 9 12 14 25 42 + Pre 2 4 10 25 43 59 128
gp95
p65
p55
p50
gp4
1p31
p24
p15
BIO-RAD NOVAPATH HIV UCD-1
H3J
D55
+ Pre 9 14 25 42 + Pre 10 25 43 59 68 128
p32
p24
p18

FIG. 7A

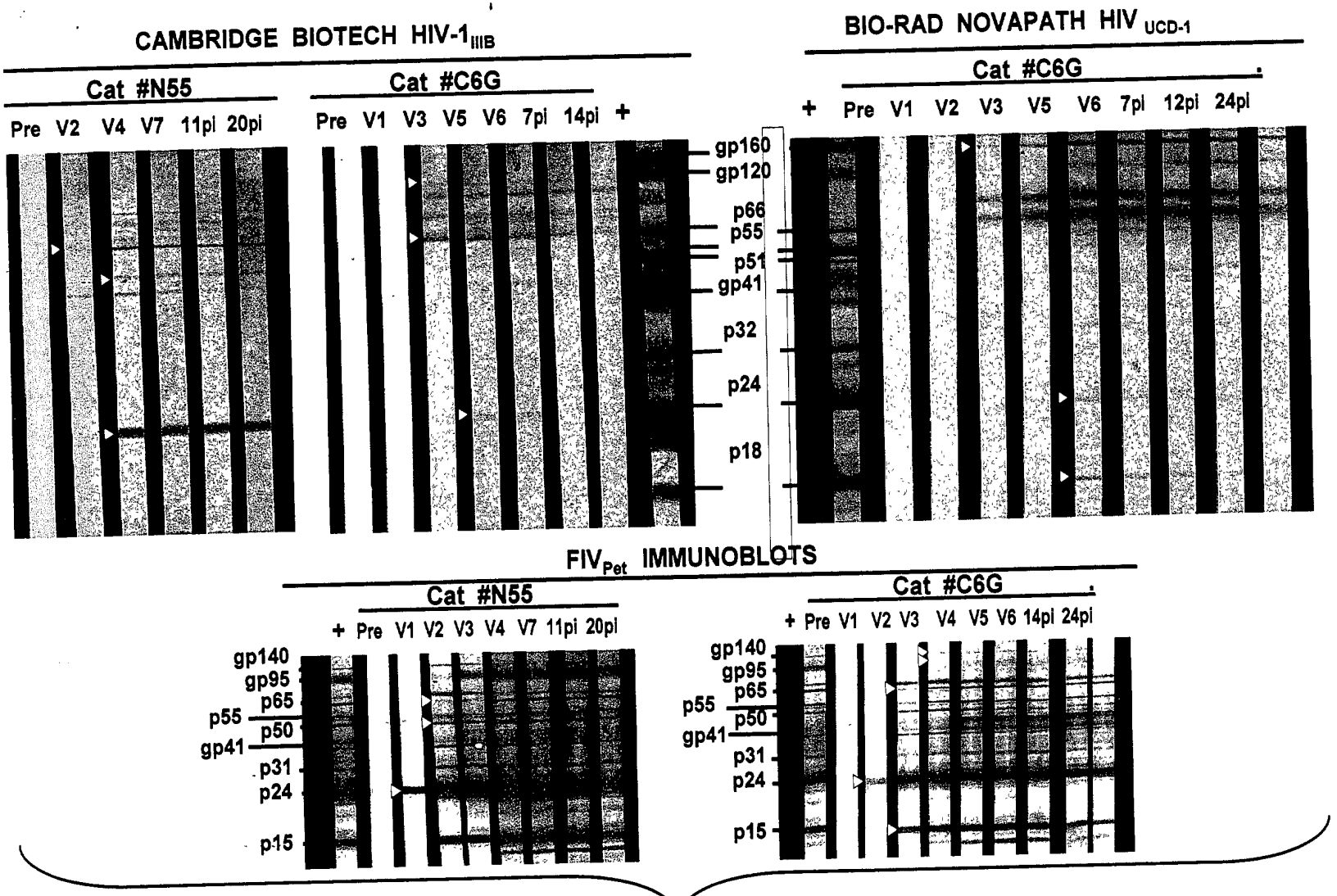

CAMBRIDGE BIOTECH HIV-1IIIB
Cat #N55
Pre V2 V4 V7 11pi 20pi
Cat #C6G
Pre V1 V3 V5 V6 7pi 14pi +
gp160
gp120
p66
p55
p51
gp41
p32
p24
p18
BIO-RAD NOVAPATH HIV UCD-1
Cat #C6G
+ Pre V1 V2 V3 V5 V6 7pi 12pi 24pi
FIVPet IMMUNOBLOTS
Cat #N55
+ Pre V1 V2 V3 V4 V7 11pi 20pi
gp140
gp95
p65
p55
p50
gp41
p31
p24
p15
Cat #C6G
+ Pre V1 V2 V3 V4 V5 V6 14pi 24pi
gp140
gp95
p65
p55
p50
gp41
p31
p24
p15

FIG. 7B

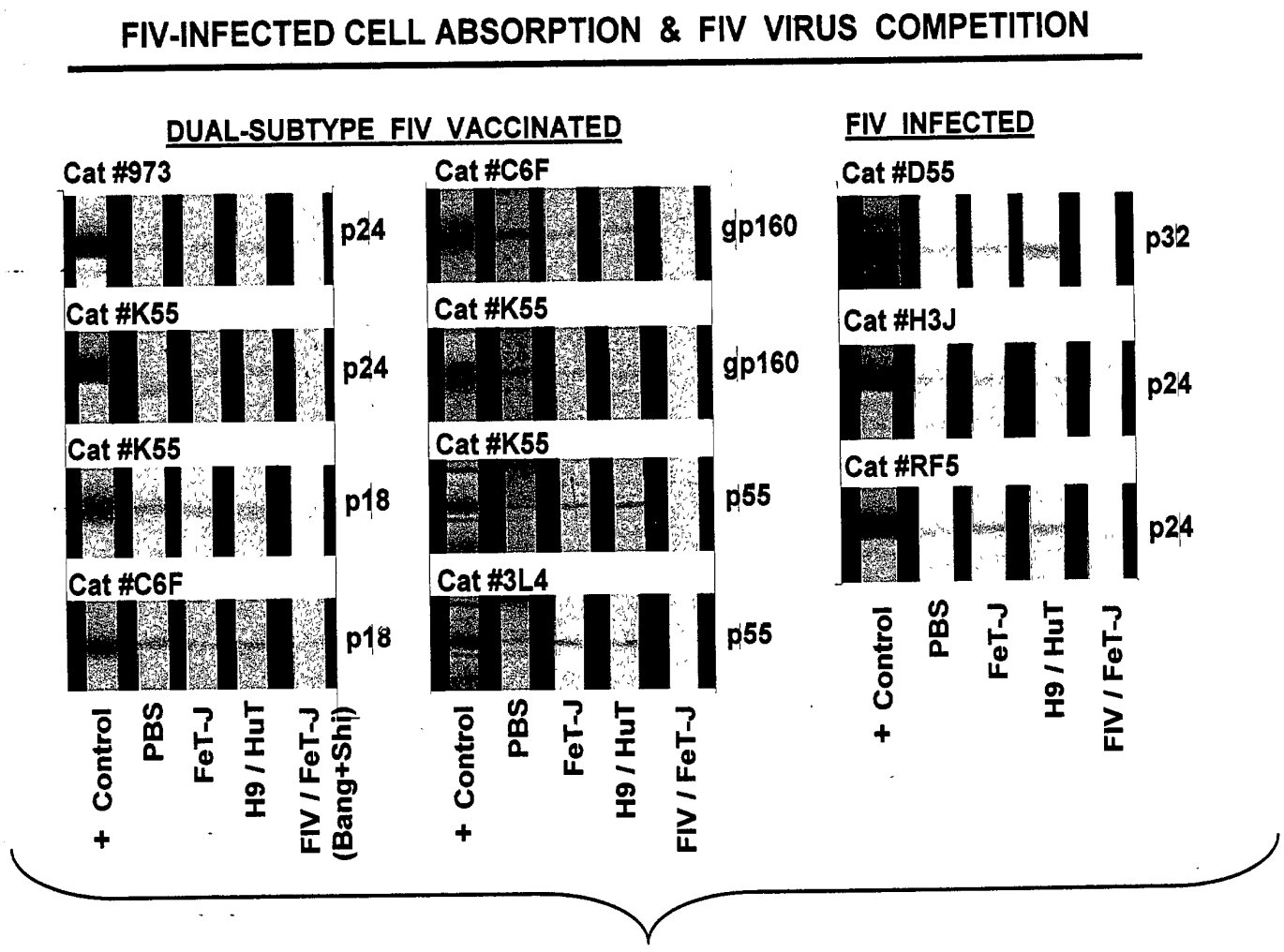
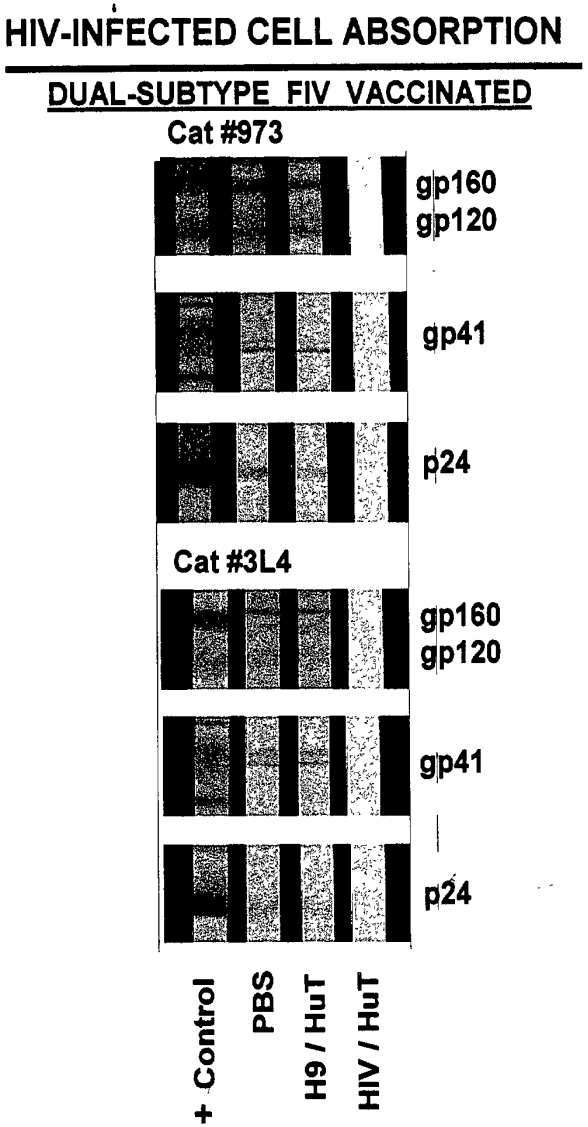

FIV-INFECTED CELL ABSORPTION & FIV VIRUS COMPETITION
DUAL-SUBTYPE FIV VACCINATED
FIV INFECTED
Cat #973
p24
Cat #K55
p24
Cat #K55
p18
Cat #C6F
p18
Cat #C6F
gp160
Cat #K55
gp160
Cat #K55
p55
Cat #3L4
p55
Cat #D55
p32
Cat #H3J
p24
Cat #RF5
p24
+ Control
PBS
FeT-J
H9 / HuT
FIV / FeT-J
(Bang+Shi)
+ Control
PBS
FeT-J
H9 / HuT
FIV / FeT-J
+ Control
PBS
FeT-J
H9 / HuT
FIV / FeT-J

FIG. 8A

FIG. 8B


HIV-INFECTED CELL ABSORPTION
DUAL-SUBTYPE FIV VACCINATED
Cat #973
gp160
gp120
gp41
p24
Cat #3L4
gp160
gp120
gp41
p24
+ Control
PBS
H9 / HuT
HIV / HuT

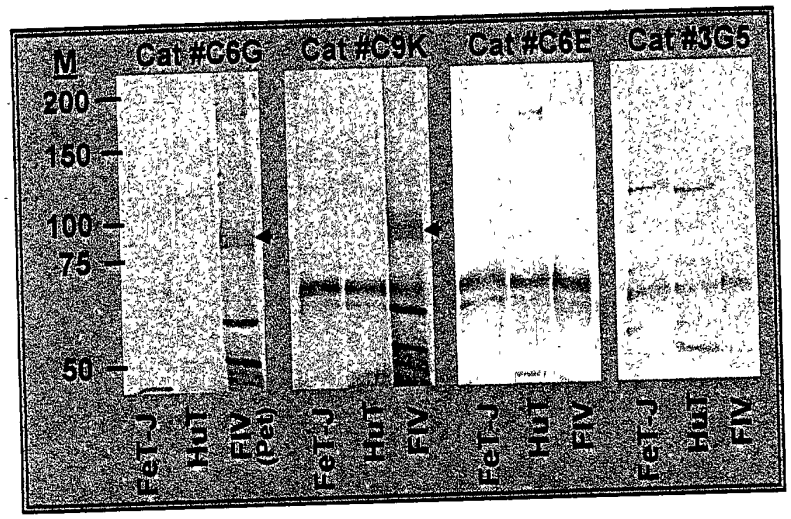

M
Cat #C6G
Cat #C9K
Cat #C6E
Cat #3G5
200
150
100
75
50
FeT-J
HuT
FIV (Pet)
FeT-J
HuT
FIV
FeT-J
HuT
FIV
FeT-J
HuT
FIV

FIG. 8C

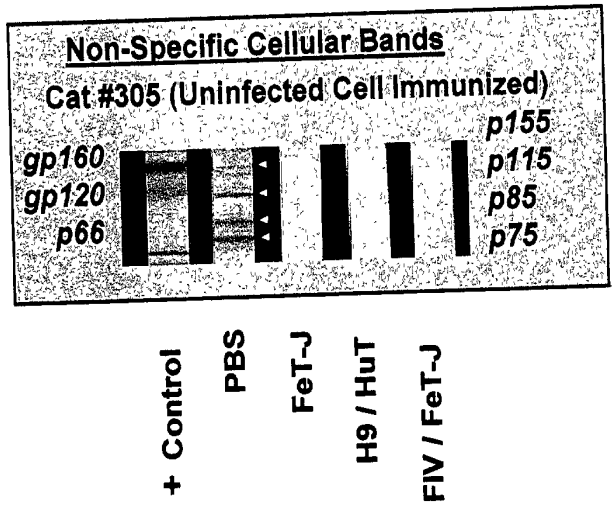

Non-Specific Cellular Bands
Cat #305 (Uninfected Cell Immunized)
gp160
gp120
p66
p155
p115
p85
p75
+ Control
PBS
FeT-J
H9 / HuT
FIV / FeT-J

FIG. 8D

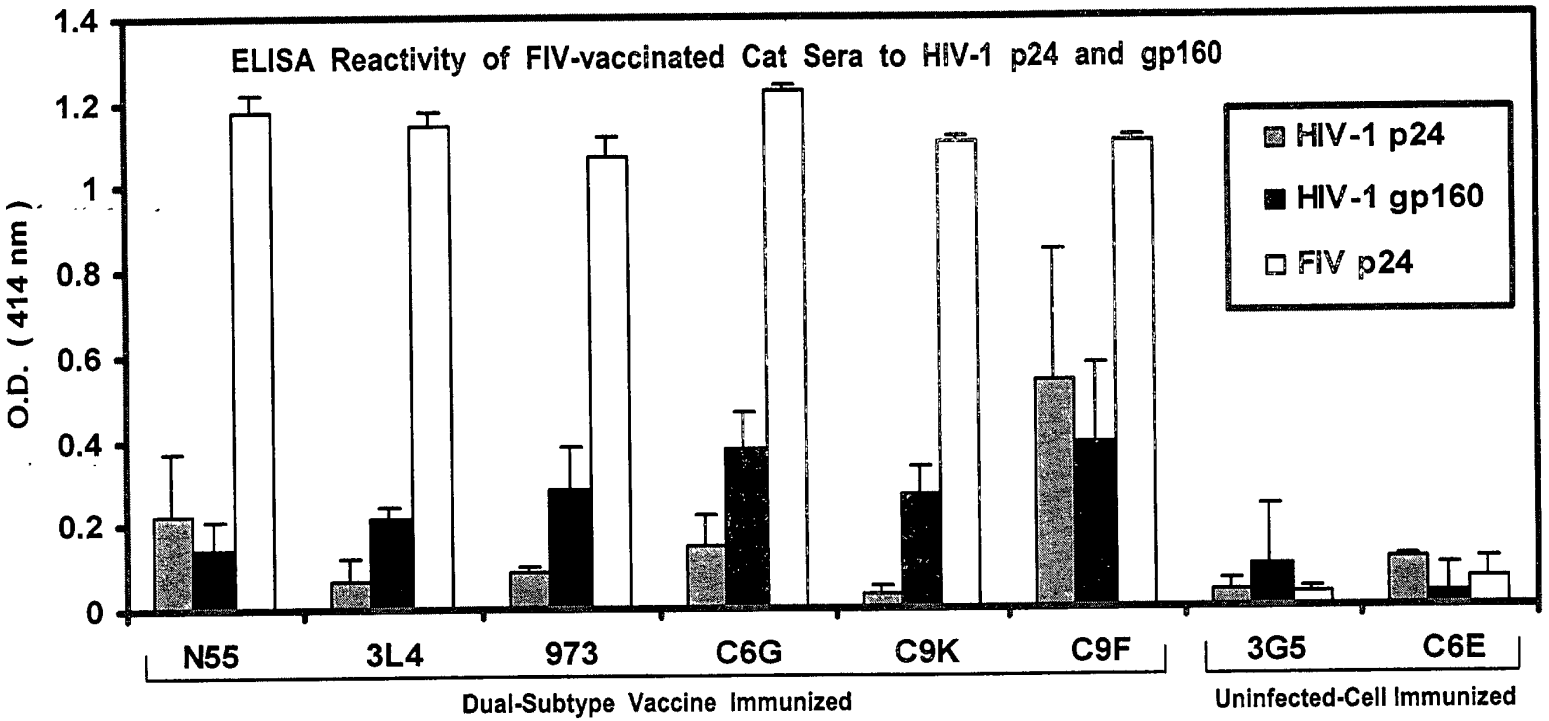

ELISA Reactivity of FIV-vaccinated Cat Sera to HIV-1 p24 and gp160
O.D. (414 nm)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
HIV-1 p24
HIV-1 gp160
FIV p24
N55
3L4
973
C6G
C9K
C9F
3G5
C6E
Dual-Subtype Vaccine Immunized
Uninfected-Cell Immunized

FIG. 9A

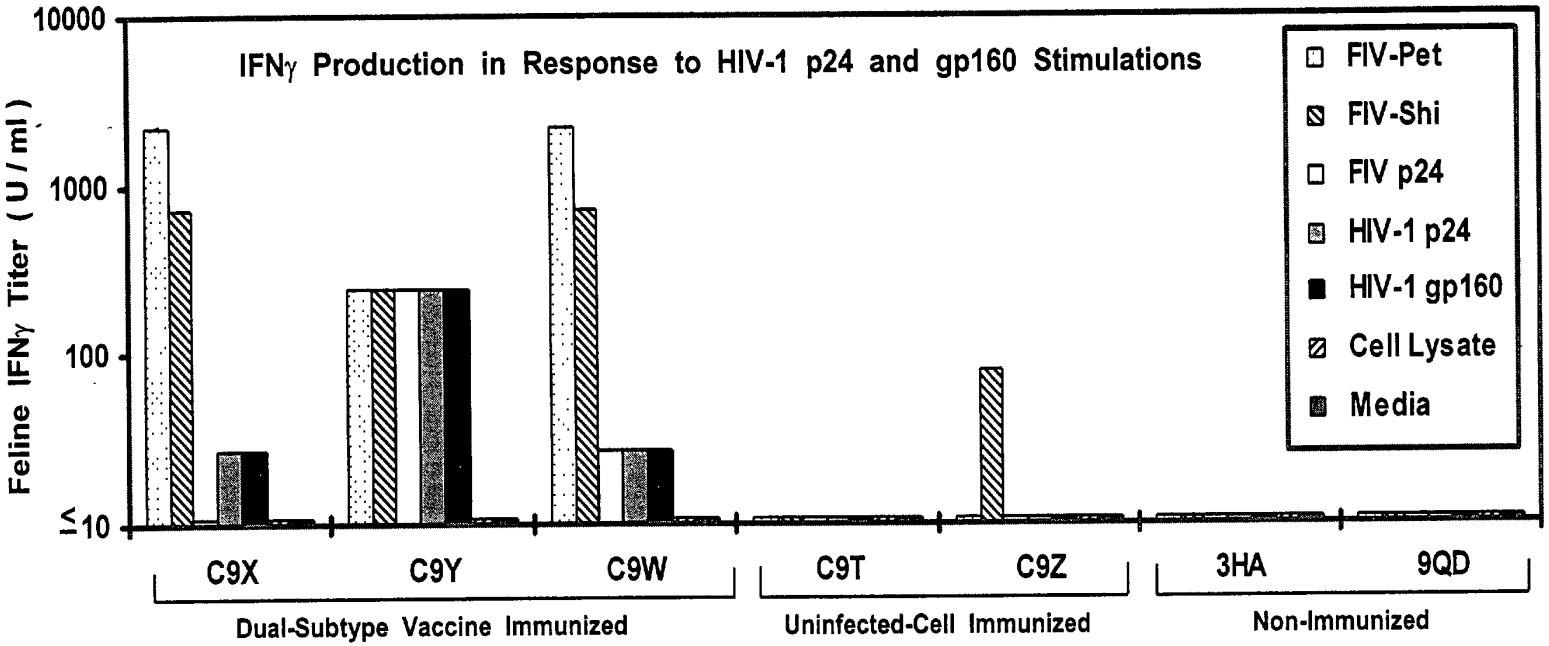

IFNγ Production in Response to HIV-1 p24 and gp160 Stimulations
Feline IFNγ Titer (U / ml)
10000
1000
100
≤10
FIV-Pet
FIV-Shi
FIV p24
HIV-1 p24
HIV-1 gp160
Cell Lysate
Media
C9X
C9Y
C9W
C9T
C9Z
3HA
9QD
Dual-Subtype Vaccine Immunized
Uninfected-Cell Immunized
Non-Immunized

FIG. 9B

```
Consensus --C-GC-GCTGAA-A-ATGTA--CTCA-ATGGGATTAGA-AC-AG-CCATCT---A--GA----GG-GGAAA-G--G 385
  Pet gag TGCTGCAGCTGAAAATATGTATTCTCAAATGGGATTAGACACTAGGCCATCTATGAAAGAAGCAGGTGGAAAAGAGG 385
     Bang TGCTGCAGCTGAAAACATGTATACTCAGATGGGATTAGACACCAGGCCATCTACAAGAGAAGCAGGAGGAAAAGAGG 385
JSY3 gag O TGCTGCAGCTGAAAATATGTACACTCAGATGGGATTAGACACTAGACCATCTATGAGAGAAGCAGGAGGAAAAGAGG 385
  UK8 gag TGCTGCAGCTGAAAATATGTATACTCAGATGGGATTAGACACTAGACCATCTACAAAGGAAGCTGGAGGAAAAGAGG 385
 Shizuoka  TACTGCCGCTGAAAATATGTATGCTCAGATGGGATTAGATACTAGACCATCTTTAAAGGAGGCAGGAGGAAAGGTAG 133
  Aomori 1 CACAGCAGCTGAAAATATGTATGCTCAGATGGGATTAGACACCAGACCATCTATAAAAGAAAGTGGGGGAAAAGAAG 133
  TM2 gag CACAGCAGCTGAAAATATGTATGCTCAGATGGGATTAGACACCAGACCATCTGTAAAAGAAAGTGGGGGAAAAGAAG 385
RT Forward ---------- 0
 RT Probe ---------- 0
RT Reverse ---------- 0
  FC1 GAG CGCAGCAGCTGAACACATGTATGCTCAGATGGGATTAGATACCAGACCATCTATAAAAGAAAGTGGGGGAAAAGAAG 385
     A9=4 ---------- 0
     B4=5 ---------- 0

Consensus A--G--CCTCCACAGGC-T-TCCTAT-CAAACA--AAATGGAG-ACCA-A--A-GTAGC-CT-GA-CC-AAAATGGT 462
  Pet gag AAGGC-CCTCCACAGGCATATCCTATTCAAACAGTAAATGGAGTACCACAATATGTAGCACTTGACCCAAAAATGGT 461
     Bang AAAGC-CCTCCACAGGCATATCCTATTCAAACAGTAAATGGAGCACCACAATATGTAGCACTTGACCCAAAAATGGT 461
JSY3 gag O AAAGC-CCTCCACAGGCATCTCCTATTCAAACAGCAAATGGAGCACCACAATATGTAGCACTTGACCCAAAAATGGT 461
  UK8 gag AAGGC-CCTCCACAGGCATATCCTATTCAAACAGTAAATGGAGCACCACAATATGTAGCTCTTGACCCAAAAATGGT 461
 Shizuoka  A-GGAGCCTCCACAGGCATATCCTATCCAAACAATAAATGGAGCACCACAATATGTAGCCCTGGATCCTAAAATGGT 209
  Aomori 1 AAGGA-CCTCCACAGGCTTATCCTATTCAAACAGTAAATGGAGCACCACAGTATGTAGCCCTTGATCCAAAAATGGT 209
  TM2 gag AAGGA-CCTCCACAGGCTTATCCTATTCAAACAGTAAATGGAGCACCACAGTATGTAGCCCTTGATCCAAAAATGGT 461
RT Forward --AGC-CCTCCACAGGCATCTC---------- 19
 RT Probe ----------ATTCAAACAGCAAATGGAGCACCACAATATG---------- 31
RT Reverse ----------TTGACCCAAAAATGGT 16
  FC1 GAG AAGGA-CCTCCACAGGCTTATCCTATTCAAACAGTAAATGGAGCACCACAGTATGTAGCCCTTGACCCAAAAATGGT 461
     A9=4 -TAGC-CCTCCACAGGCATATCCTATTCAAACAGTAAATGGAGTACCATAACACGTAGCACTTGACCCAAAAATGGT 75
     B4=5 --AGC-CCTCCACAGGCATATCCTATTCAAACAGTAAATGGAGTACCACAATATGTAGCGCTTGACCCAAAAATGGT 74
```

FIG. 10A

```
Consensus GTC-A-TTT-ATGGA-AA-GCAAGAGA-GG--TAGGAGG-GA-GA-GT-CA--T-TGGTT-AC-GC-TT-TC-GC-A 539
  Pet gag GTCCATTTTTATGGAAAAGGCAAGAGAAGGACTAGGAGGTGAGGAAGTTCAACTATGGTTTACTGCCTTCTCTGCAA 538
     Bang GTCCATTTTTATGGAAAAGGCAAGAGAAGGACTAGGAGGTGAGGAAGTTCAATTATGGTTTACTGCCTTCTCTGCAA 538
JSY3 gag O GTCCATTTTTATGGAAAAGGCAAGAGAAGGATTAGGAGGTGAGGAAGTTCAGCTATGGTTTACTGCCTTCTCTGCAA 538
  UK8 gag GTCTATTTTCATGGAAAAGGCAAGAGAAGGGTTAGGAGGTGAAGAAGTTCAACTATGGTTCACAGCCTTCTCTGCAA 538
 Shizuoka  GTCCATTTTTATGGAAAAAGCAAGAGAAGGATTAGGAGGAGAGGAGGTCCAACTATGGTTTACTGCATTTTCAGCTA 286
  Aomori 1 GTCCATTTTTATGGAGAAGGCAAGAGAGGGGCTAGGAGGTGAGGAGGTCCAACTGTGGTTCACAGCCTTTTCAGCTA 286
  TM2 gag GTCCATTTTTATGGAGAAGGCAAGAGAGGGGCTAGGAGGTGAGGAGGTCCAACTGTGGTTCACAGCCTTTTCAGCTA 538
RT Forward ---------------------------------------------------------------------------- 19
  RT Probe ---------------------------------------------------------------------------- 31
RT Reverse GTCCA------------------------------------------------------------------------ 21
  FC1 GAG GTCCATTTTTATGGAAAAAGCAAGAGAGGGGCTAGGAGGTGAGGAGGTCCAACTGTGGTTCACAGCCTTTTCTGCTA 538
     A9=4 G------------------------------------------------------------------------- 76
     B4=5 GTCCAA---------------------------------------------------------------------- 80

Consensus AT-TAAC--C-ACTGA-ATGGC-ACATTAAT-ATG-C-GC-CC-GG-TG-GC-GCAG-TAA-GA-AT--T-GA-GAA 616
  Pet gag ATTTAACACCTACTGACATGGCCACATTAATAATGGCCGCACCAGGGTGCGCTGCAGATAAAGAAATATTGGATGAA 615
     Bang ATTTAACACCTACTGACATGGCCACATTAATAATGGCCGCACCAGGGTGCGCTGCAGATAAAGAAATATTGGANGAA 615
JSY3 gag O ATTTAACACCTACTGACATGGCCACATTAATAATGGCCGCACCAGGGTGCGCTGCAGATAAAGAAATATTGGATGAA 615
  UK8 gag ATTTAACACCTACTGACATGGCCACATTAATAATGGCCGCACCAGGGTGCGCTGCAGATAAAGAAATATTGGATGAA 615
 Shizuoka  ATCTAACATCAACTGATATGGCTACATTAATCATGTCTGCACCAGGTTGTGCAGCAGATAAGGAGATCTTAGATGAA 363
  Aomori 1 ATTTAACATCAACTGATATGGCTACATTAATTATGTCCGCACCTGGCTGTGCAGCAGTTAAAGAAATTCTAGATGAA 363
  TM2 gag ATTTAACATCAACTGATATGGCTACATTAATTATGTCCGCACCTGGCTGTGCAGCAGATAAAGAAATCCTAGATGAA 615
RT Forward ---------------------------------------------------------------------------- 19
  RT Probe ---------------------------------------------------------------------------- 31
RT Reverse ---------------------------------------------------------------------------- 21
  FC1 GAG ATTTAACTTCAACTGATATGGCTACATTAATTATGTCTGCGCCTGGCTGTGCAGCAGATAAAGAGATCTTAGATGAA 615
     A9=4 ---------------------------------------------------------------------------- 76
     B4=5 ---------------------------------------------------------------------------- 80
```

FIG. 10B